

TECHNICAL NOTES

SURVEY OVERVIEW

The Survey of Earned Doctorates (SED) is designed to obtain data on the number and characteristics of individuals receiving research doctoral degrees from U.S. institutions. The results of the survey are used to assess trends in doctorate production. This information is vital for educational and labor force planners within the Federal Government and in academia. The survey has been completed by individuals receiving research doctorates since 1958. The graduate schools are responsible for submitting completed forms and sending them to be compiled in the Doctorate Records File (DRF).

- Key variables of the survey include:
- Academic institution attended
 - Citizenship status at graduation
 - Country of birth
 - Country of citizenship
 - Date of birth
 - Disability status
 - Educational attainment of parents
 - Educational history after high school
 - Field of degree specialty (N= 287)
 - Field of employment
 - Field of science and engineering
 - Level of degree
 - Marital status
 - Number of dependents
 - Place of birth
 - Postgraduate plans
 - Primary type of financial support
 - Race and Hispanic ethnicity (by subgroup)
 - Sex
 - Type of academic institution that conferred degrees
 - Type of employment planned
 - Type of financial support (e.g., Fellowship, research assistantship, etc.)
 - Type of institutional control (public versus private)
 - Work activity planned after doctoral degree

A complete questionnaire is contained in the next section.

DATA COLLECTION

The population eligible for the 2001 survey consisted of all individuals who received research doctorates (only first doctorates are included) from U.S. academic institutions in the 12-month period ending on June 30, 2001.

The total universe consisted of 40,744 persons in over 400 institutions that conferred research doctorates awards in 2001.

Survey instruments were mailed to institutional coordinators in the graduate schools who distributed the survey forms to individuals receiving a research doctorate. The institutional coordinators also collected the forms and returned them to the contractor for editing/processing. Followup of missing critical items and forms is also conducted.

Since the survey collects a complete college education history, coding of institutions is very important. Because one-third of doctorate recipients from U.S. universities are from foreign countries, a coding manual for foreign institutions of higher education was developed by the U.S. Department of Education, entitled "Mapping the World of Education: The Comparative Database System" (3 Volumes).

The survey was conducted by the National Research Council of the National Academy of Sciences under contract to the National Science Foundation until 1997; the National Opinion Research Center (Chicago, IL.) currently conducts the survey under contract.

NONRESPONSE

Of the 40,744 new research doctorates granted in 2001, 92.2 percent of degree recipients returned their completed survey instruments. Limited records (containing field of study, doctorate institution, and sex) for nonrespondents are constructed based on information collected from administrative lists of the university—commencement programs, graduation lists, and other similar public records. Nonresponse was concentrated in certain institutions; graduates from 10 institutions accounted for 28 percent of the total nonrespondents.

Item nonresponse rates in 2001 for the most frequently used variables ranged from 0.2 percent for sex to 6.2 percent for race/ethnicity. No imputation was performed for missing data items.

Key variable	Item response rate
Sex	99.8%
Citizenship	94.1
Country of non-U.S. citizens	98.8
Race/ethnicity	93.8
Postgraduation location (U.S. or foreign)	92.1

A complete quality profile for the 2001 SED is available upon request. A complete list of methodological research concerning the Survey of Earned Doctorates is also available upon request.

AVAILABILITY OF DATA

The survey has collected information on doctoral recipients annually since 1957. More limited information is contained on the SED data file for research doctorate recipients from 1920 to 1956.

The data from this survey are published annually in Detailed Statistical Tables in the series Science and Engineering Doctorate Awards, available on the SRS Web site at (www.nsf.gov/sbe/srs/ssed/sedmeth.htm). These reports focus on science and engineering fields of study. (The list of how fields of study are grouped for this report is shown at the end of the Technical Notes.) Companion data from this survey for earlier years (1960-91) were published in Detailed Statistical Tables in the report Science and Engineering Doctorates: 1960-91 (NSF 93-301). This report is out of print, but tables from it are available on request.

Information from the survey is also included in the report series, *Science and Engineering Degrees*; in *Science and Engineering Indicators*; in *Women, Minorities, and Persons With Disabilities in Science and Engineering*; in *Foreign Participation in U.S. Academic Science and Engineering*; and in special occasional

publications such as *Undergraduate Origins of Recent Science and Engineering Doctorate Recipients*.

Results are also included in a publication series on ALL fields of study—*Doctorate Recipients from United States Universities: Summary Report*; this interagency report is sponsored by the Federal agencies that support the Survey of Earned Doctorates (6 in 2001). The report is available on the web at: www.norc.uchicago.edu/issues/docdata.htm.

Selected summary data from this survey are available on the SRS Web site and in the webcaspar database by institution. Access to restricted data for researchers interested in analyzing microdata can be arranged through a licensing agreement. Additional information about this survey can be obtained by contacting:

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FIELDS OF STUDY

The groupings of science and engineering fields of study are shown on the next page.

FIELDS OF STUDY

ENGINEERING

Aeronautical/Astronautical Engineering

300 Aerospace, Aeronautical, and Astronautical Engineering

Chemical Engineering

312 Chemical Engineering

366 Petroleum Engineering

369 Polymer and Plastics Engineering

Civil Engineering

315 Civil Engineering

336 Environmental Health Engineering

Electrical Engineering

318 Communications Engineering

321 Computer Engineering

324 Electrical and Electronics Engineering

Industrial Engineering

339 Industrial and Manufacturing Engineering

Mechanical Engineering

327 Engineering Mechanics

345 Mechanical Engineering

Materials/Metallurgical Engineering

309 Ceramic Sciences

342 Materials Science

348 Metallurgical Engineering

Other Engineering

303 Agricultural Engineering

306 Bioengineering and Biomedical Engineering

330 Engineering Physics

333 Engineering Science

351 Mining and Mineral Engineering

357 Nuclear Engineering

360 Ocean Engineering

363 Operations Research

372 Systems Engineering

398 Engineering, General

399 Engineering, Other

PHYSICAL SCIENCES

Astronomy

- 500 Astronomy
- 505 Astrophysics

Chemistry

- 520 Analytical Chemistry
- 522 Inorganic Chemistry
- 524 Nuclear Chemistry
- 526 Organic Chemistry
- 528 Pharmaceutical Chemistry
- 530 Physical Chemistry
- 532 Polymer Chemistry
- 534 Theoretical Chemistry
- 538 Chemistry, General
- 539 Chemistry, Other

Physics

- 560 Acoustics
- 561 Chemical and Atomic/Molecular Physics
- 564 Elementary Particle Physics
- 566 Fluids
- 568 Nuclear Physics
- 569 Optics
- 570 Plasma and High-Temperature Physics
- 572 Polymer Physics
- 574 Solid State and Low-Temperature Physics
- 578 Physics, General
- 579 Physics, Other

Other Physical Sciences

- 599 Physical Sciences, Other

EARTH, ATMOSPHERIC, AND OCEAN SCIENCES

Atmospheric Sciences

- 510 Atmospheric Physics and Chemistry
- 512 Atmospheric Dynamics
- 514 Meteorology
- 518 Atmospheric Science/Meteorology, General
- 519 Atmospheric Science/Meteorology, Other

Geosciences

- 540 Geology
- 542 Geochemistry
- 544 Geophysics and Seismology
- 546 Paleontology
- 548 Mineralogy and Petrology
- 550 Stratigraphy and Sedimentation
- 552 Geomorphology and Glacial Geology
- 558 Geological and Related Sciences, General
- 559 Geological and Related Sciences, Other
- 585 Hydrology and Water Resources

Oceanography

- 590 Oceanography
- 595 Marine Sciences

Other Environmental Sciences

- 580 Environmental Science

MATHEMATICAL/COMPUTER SCIENCES**Mathematics**

- 420 Applied Mathematics
- 425 Algebra
- 430 Analysis and Functional Analysis
- 435 Geometry
- 440 Logic
- 445 Number Theory
- 450 Mathematical Statistics
- 455 Topology
- 460 Computing Theory and Practice
- 465 Operations Research
- 498 Mathematics, General
- 499 Mathematics, Other

Computer Science

- 400 Computer Science
- 410 Information Science and Systems

BIOLOGICAL/AGRICULTURAL SCIENCES

Agricultural Sciences

- 005 Animal Breeding and Genetics
- 010 Animal Nutrition
- 012 Dairy Science
- 014 Poultry Science
- 019 Animal Sciences, Other
- 020 Agronomy and Crop Science
- 025 Plant Breeding and Genetics
- 030 Plant Pathology
- 039 Plant Sciences, Other
- 043 Food Engineering
- 044 Food Sciences, Other
- 046 Soil Chemistry and Microbiology
- 049 Soil Sciences, Other
- 050 Horticulture Science
- 055 Fisheries Science and Management
- 066 Forest Biology
- 068 Forest Engineering
- 070 Forest Management
- 072 Wood Science and Pulp/Paper Technology
- 074 Conservation and Renewable Natural Resources
- 079 Forestry and Related Sciences
- 080 Wildlife and Range Management
- 098 Agricultural Science, General
- 099 Agricultural Science, Other

Biological Sciences

- 100 Biochemistry
- 103 Biomedical Sciences
- 105 Biophysics
- 107 Biotechnology Research
- 110 Bacteriology
- 115 Plant Genetics
- 120 Plant Pathology
- 125 Plant Physiology
- 129 Botany, Other
- 130 Anatomy
- 133 Biometrics and Biostatistics
- 136 Cell Biology
- 139 Ecology
- 142 Embryology
- 145 Endocrinology
- 148 Entomology
- 151 Biological Immunology
- 154 Molecular Biology
- 157 Microbiology
- 160 Neuroscience
- 163 Nutritional Sciences
- 166 Parasitology

Biological Sciences, continued

169	Toxicology
170	Genetics, Human and Animal
175	Pathology, Human and Animal
180	Pharmacology, Human and Animal
185	Physiology, Human and Animal
189	Zoology, Other
198	Biological Sciences, General
199	Biological Sciences, Other

Psychology

600	Clinical Psychology
603	Cognitive Psychology and Psycholinguistics
606	Comparative Psychology
609	Counseling Psychology
612	Developmental and Child Psychology
613	Human Indiv. & Family Development
615	Experimental Psychology
618	Educational Psychology
620	Family and Marriage Counseling
621	Industrial and Organizational Psychology
624	Personality Psychology
627	Physiological Psychology/Psychobiology
630	Psychometrics
633	Quantitative Psychology
636	School Psychology
639	Social Psychology
648	Psychology, General
649	Psychology, Other

SOCIAL SCIENCES**Economics**

000	Agricultural Economics
666	Economics
668	Econometrics

Political Science

674	International Relations/Affairs
678	Political Science and Government
682	Public Policy Analysis
976	Public Administration

Sociology

662	Demography and Population Studies
686	Sociology

Other Social Sciences

- 650 Anthropology
- 652 Area Studies
- 658 Criminology
- 670 Geography
- 690 Statistics
- 694 Urban Affairs/Studies
- 698 Social Sciences, General
- 699 Social Sciences, Other
- 710 History and Philosophy of Science and Technology
- 729 Linguistics
- 770 American Studies
- 773 Archeology

NON-S&E**Health and Medical Sciences**

- 200 Speech/Language Pathology and Audiology
- 210 Environmental Health
- 212 Health Systems/Services Administration
- 215 Public Health
- 220 Epidemiology
- 222 Exercise Physiology/Science Kinesiology
- 230 Nursing
- 240 Pharmacy
- 245 Rehabilitation/Therapeutic Services
- 250 Veterinary Science
- 298 Health Sciences, General
- 299 Health Sciences, Other

HUMANITIES**History**

- 700 History, American
- 703 History, Asian
- 705 History, European
- 718 History, General
- 719 History, Other

English and Literature

- 720 Classics
- 723 Comparative Literature
- 732 Literature, American
- 733 Literature, English
- 734 English Language
- 736 Speech and Rhetorical Studies
- 738 Letters, General
- 739 Letters, Other

Foreign Languages

- 740 French
- 743 German
- 746 Italian
- 749 Spanish
- 752 Russian
- 755 Slavic (Other than Russian)
- 758 Chinese
- 762 Japanese
- 765 Hebrew
- 768 Arabic
- 769 Other Languages and Literature

Other Humanities

- 776 Art History/Criticism/Conservation
- 780 Music
- 785 Philosophy (see also 440)
- 790 Religion
- 795 Drama/Theater Arts
- 798 Humanities, General
- 799 Humanities, Other

Education

- 800 Curriculum and Instruction
- 805 Education Administration and Supervision
- 807 Educational Leadership
- 810 Educational/Instructional Media Design
- 815 Educational Statistics/Research Methods
- 820 Educational Assessment/Test Measurement
- 822 Educational Psychology
- 825 School Psychology
- 830 Social/Philosophical Foundations of Education
- 835 Special Education
- 840 Counseling Education/Counseling and Guidance Services
- 845 Education Evaluation and Research

Teacher Education

- 850 Pre-Elementary/Early Childhood Teacher Education
- 852 Elementary Teacher Education
- 856 Secondary Teacher Education
- 858 Adult and Continuing Teacher Education

Teaching Fields

- 860 Agricultural Education
- 861 Art Education
- 862 Business Education
- 864 English Education
- 866 Foreign Languages Education
- 868 Health Education
- 870 Home Economics Education
- 872 Technical and Industrial Arts Education

Teaching Fields, continued

- 874 Mathematics Education
- 876 Music Education
- 880 Physical Education and Coaching
- 882 Reading Education
- 884 Science Education
- 885 Social Science Education
- 887 Technical Education
- 888 Trade and Industrial Education
- 889 Teacher Education, Specific Academic and Vocational Programs, Other

Other Education

- 898 Education, General
- 899 Education, Other

PROFESSIONAL/OTHER**Business Management and Administrative Services**

- 900 Accounting
- 905 Banking/Financial Support Services
- 910 Business Administration and Management
- 915 Business/Managerial Economics
- 917 Management Information Systems/Business

Data Processing

- 920 Marketing Management and Research
- 930 Operations Research (see also 363, 465)
- 935 Organizational Behavior (see also 621)
- 938 Business Management/Administrative Services, General
- 939 Business Management/Administrative Services, Other

Information Fields

- 940 Communications Research
- 947 Mass Communications
- 957 Communication Theory
- 958 Communications, General
- 959 Communications, Other

Other Professional Fields

- 960 Architecture Environmental Design
- 964 Home Economics
- 968 Law
- 972 Library Science
- 974 Parks/Recreation/Leisure/Fitness
- 980 Social Service Professions
- 984 Theology and Religious Education
- 988 Professional Fields, General
- 989 Professional Fields, Other